

## APPENDIX

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PATENT APPLICATION  
Mo-5883  
LeA 33,915

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN APPLICATION OF

REINHOLD KLIPPER ET AL

SERIAL NO.: 09/643,194

FILED: AUGUST 21, 2000

TITLE: PROCESS FOR PREPARING  
MONODISPERSE ANION  
EXCHANGERS

) GROUP NO: 1713

) EXAMINER: B. Lipman

DECLARATION UNDER 37 CFR 1.132

I, Reinhold Klipper of Gellenkircherstr. 29, 50933 Cologne, Germany, declare  
as follows:

1. I studied chemistry at the University of Cologne and obtained a  
doctorate in chemistry in 1978. Since 1981 I have been employed by Bayer AG in  
Leverkusen, Germany, as a research chemist for development of new ion  
exchangers.

2. I am an inventor of and familiar with the subject matter of the above-  
identified United States patent application.

3. I performed or supervised the following experiments:

A. Preparations

Monodisperse anion exchangers (Examples 6 and 8) was prepared according  
to Examples 1a) to 1c) and 2 of the above-identified United States patent  
application, except with different amounts of crosslinker, accordingly in Example 6,  
the anion exchanger was prepared from monomer droplets (Lewapole) of 5% by  
weight crosslinker (divinylbenzene) and 61% by weight porogene to obtain  
macroporous anion exchangers. And in Example 8, the anion exchanger was  
prepared from monomer droplets (Lewapole) of 12% by weight crosslinker

(divinylbenzene) and 44% by weight porogene to obtain macroporous anion exchangers.

For comparison, heterodisperse anion exchangers (Examples 7 and 9) were prepared from a heterodisperse bead polymer according to Example 6 of U.S. Patent 3,006,866 ("Corte et al '866"), wherein, in Example 7, the anion exchanger was prepared from monomer droplets (Lewapole) of 5% by weight crosslinker (divinylbenzene) and 61% by weight porogene to obtain macroporous anion exchangers. And in Example 9, the anion exchanger was prepared from monomer droplets (Lewapole) of 12% by weight crosslinker (divinylbenzene) and 44% by weight porogene to obtain macroporous anion exchangers.

**B. Properties****Table 1**

Resin Type	Degree of Substitution of the aromatic rings of the bead polymer <sup>1</sup>	Total amount of basic groups in mmol <sup>2</sup>	Determination of the stability of the resin by the roll test <sup>3</sup>	Pressure loss (kPa/m) <sup>4</sup>
Example 6 Monodisperse anion exchanger (inventive)	1.08	3598	93	0.42
Example 7 Heterodisperse anion exchanger (comparative)	0.91	3138	85	0.40
Example 7 Monodisperse anion exchanger (inventive)	0.92	2760	Not determined	0.37
Example 8 Heterodisperse anion exchanger (comparative)	0.59	1844	Not determined	0.30

<sup>1, 2, 3</sup> Tests performed as described in the pending patent application.

<sup>4</sup> Test performed as described in Dr. Kilpper's Declaration dated September 5, 2002.

**C. Results**

The Table and comparison tests illustrate that the process of the present invention leads to anion exchanges having larger amounts of basic groups as a result of higher degree of substitution and higher stability and a better utilizable capacity of the resin. The total amount of basic groups and the utilizable capacity is lower in Examples 8 and 9 because a higher degree of crosslinking has the consequence of lower substitution degree and lower amounts of basic groups.

4. The experiments described above show that the monodisperse anion exchanger prepared according to the process of the present application was

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obtained in higher yields and exhibited unexpectedly improved performance than the comparative heterodisperse anion exchanger.

5. The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing therefrom.

Further Declarant Sayeth Not.

Signed at Leverkusen, Germany, this 21 day of March 2005.

  
Reinhold Klipper

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